

Mechanical friction acting opposite to the direction of movement during the lifting operation results in a pressure increase during the lifting operation, (~~left-hand sketch~~) Fig. 1(a). During the lowering operation, friction acts in a direction opposite to the lowering direction and results in a decrease of the pressure within the lifting cylinder. The same holds true for the viscosity. During the lifting operation, oil must be pressed through associated conduits, and the fluid pressure within the lifting cylinder will be less for non-viscous oil than for viscous oil. During the lowering operation, however, the non-viscous oil is exhausted only slowly, and this will result in an increase of the fluid pressure within the lifting cylinder.

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Abstract:

Abstract

A method for determining the weight of a load upon a load support means of a hydraulic lifting device, in particular in an industrial truck, in which method the pressure of hydraulic fluid within a lifting cylinder is measured and a reference curve representing the relationship between the weight of the load and the pressure of the hydraulic fluid is determined by multiple measurements of the pressure resulting from loads of known weight and said reference curve is stored. The method includes the steps of:

lifting and lowering the load support means during a short period upon request of an operator or automatically to sense the load before and during load lifting and lowering operations,

obtaining a plurality of pressure measuring values while the load support means is being lifted and lowered during the short period, and generating a pair of average values of said pressure measuring values for respectively lifting and, lowering, and

generating a third average value of the pair of average values for lifting and, respectively, lowering and applying the third average value to the reference curve for determining the weight of the load.